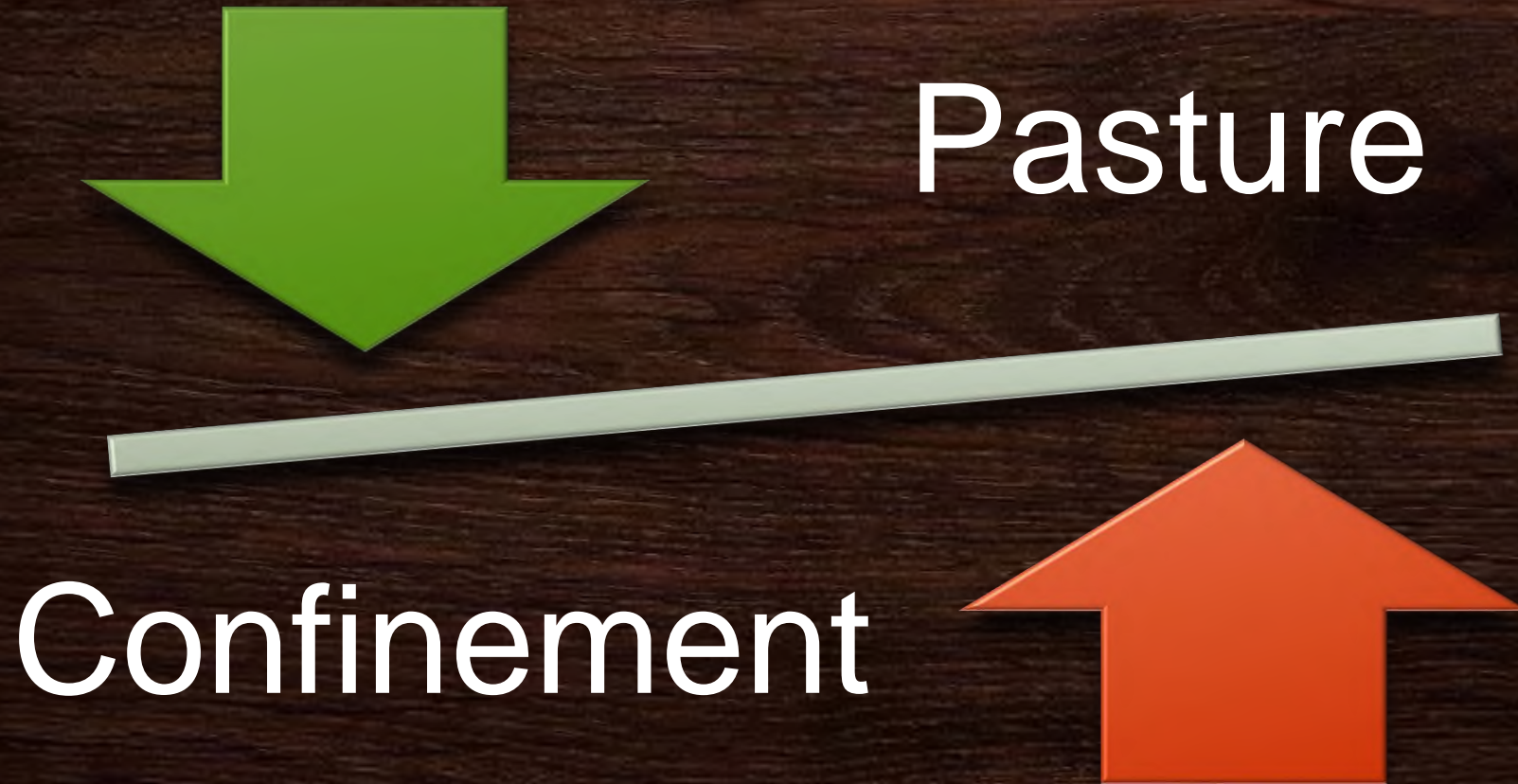


Strategies to Reduce Methane Emissions on Pasture-based Dairies

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Manure Storage Emissions



Enteric Emissions



Confinement



Pasture



Can we find a balance?

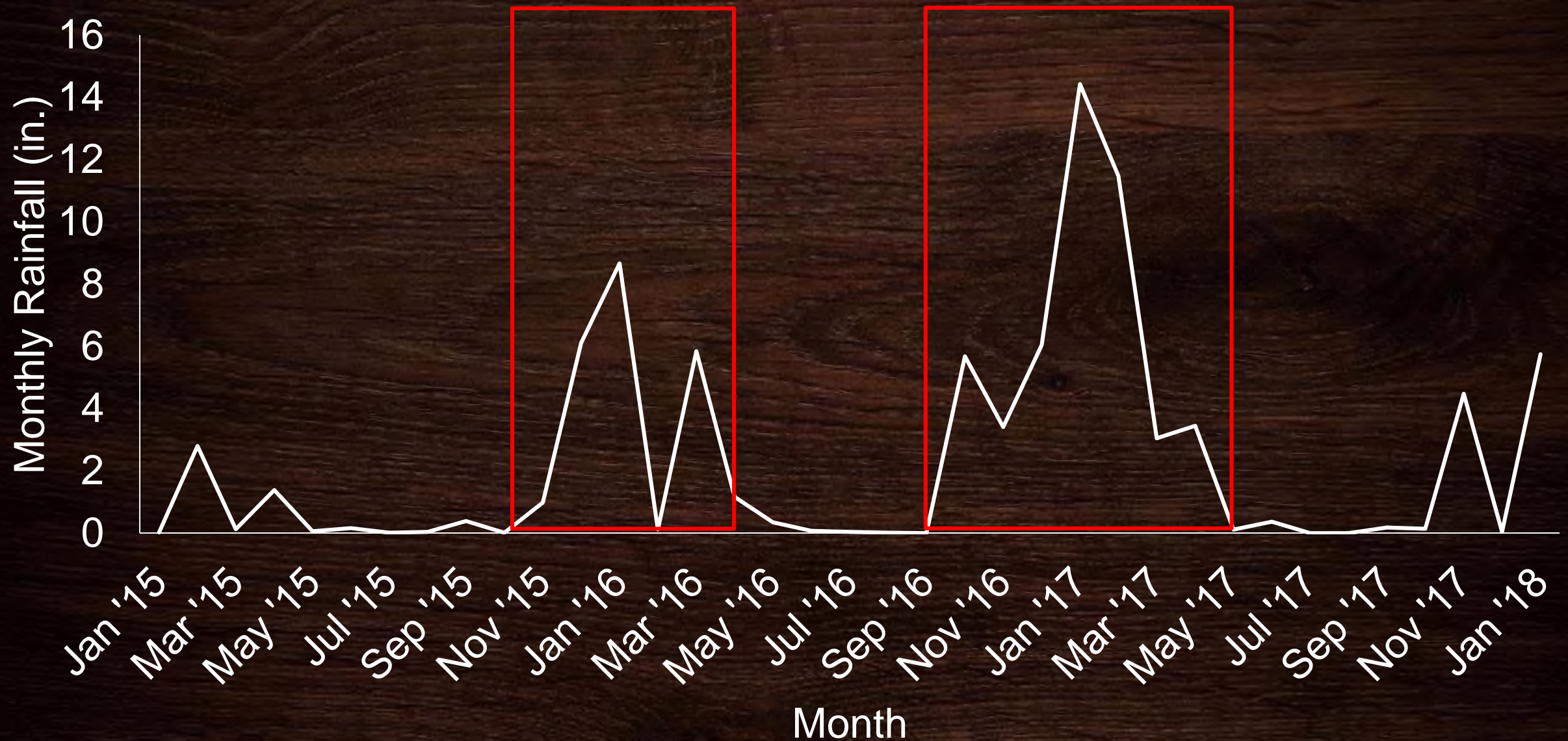


Reduce Manure Storage

Easy answer = put cows out more



Sonoma County Rainfall



Pasture Lanes



Reduce Enteric Emissions

IMPROVE EFFICIENCY!

Pasture Composition

Animals fed legumes usually (McCaughey et al. 1999; Waghorn et al. 2002), but not always (Van Dorland et al. 2007), have lower CH₄ emissions than animals fed predominantly grasses

Maturity at the time of harvest may be confounded with the impact of forage type on CH₄ emissions (Chaves et al., 2006)

Pasture rotation can help manage when grasses are consumed for optimal performance

Reduce Enteric Emissions

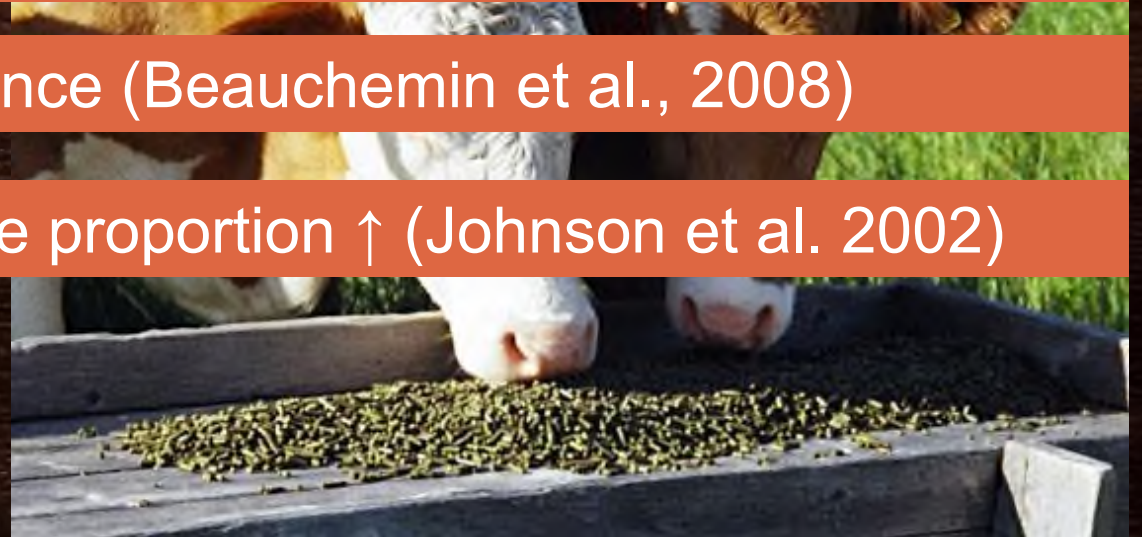
Supplementation

↑ concentrate reduces dietary energy converted to CH₄
(Blaxter and Clapperton, 1965)

★change from fiber to starch substrate and ↓ ruminal pH★

Concentrate feeding ↑ performance (Beauchemin et al., 2008)

Total farm GHG emissions ↑ as forage proportion ↑ (Johnson et al. 2002)

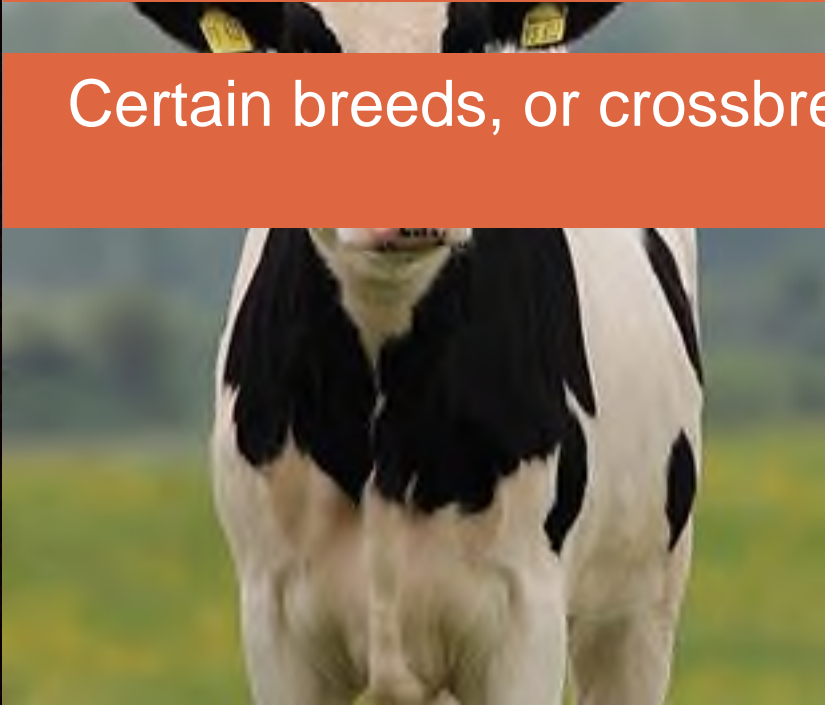


Reduce Enteric Emissions

Breeds and Genetics

Lower residual feed intake reduced methane production in beef steers (Hegarty et al., 2007)

Certain breeds, or crossbreds, may be more efficient on pasture (Prendiville et al., 2009)



Conclusions

- Adding lanes can increase time cows can be put on pasture
- While moving cattle to pasture reduces methane production from stored manure, enteric production increases
- Management should consider ways to improve cow efficiency to reduce methane per unit milk
- Pasture composition and management, supplementation, and breed selection may help reduce enteric methane production

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Questions?

